

REMARKS

Claims 1-2, 4-37 and 39-48 are pending in the application.

New dependent claims 47 and 48 are presented. No added claim fees are believe to be due since the total number of claims pending is equal to the total number of claims previously paid for.

In the Office Action, Claims 1, 4-10, 14-31, 36, 37, and 39-46 were again rejected pursuant to 35 U.S.C. §103(a) as being obvious over Hsieh et al. (U.S. Patent No. 6,574,304). Claims 2, 11, 13, and 32-35 were objected to as allowable if amended into independent form. Applicants respectfully request reconsideration of the rejections of claims 1, 4-10, 14-31, 36, 37 and 39-46, including independent claims 1, 21, and 29. *New arguments are added in italics.*

Independent claim 1 recites a processor operative to recognize one or more non-cyclical distinguished events and to select a portion of an ultrasound examination based on the recognition of the one or more distinguished events. The recognition of the one or more non-cyclical distinguished events is based on analysis by the event recognition processor of ultrasound image data sets of the ultrasound examination. Hsieh et al. guide acquisition of additional data with computer assisted diagnosis (CAD) (col. 2, lines 36-44). An image is acquired (col. 5, lines 49-50; and col. 8, lines 28-37). CAD detects features in the image (col. 5, line 62 - col. 6, line 11, col. 8; and col. 8, lines 38-56). Another image is acquired or different post-processing is performed to obtain further information if desired (col. 7, lines 35-42 and 58-63; col. 8, line 57- col. 9, line 13; and col. 10, lines 48-51). The initial image is typically stored (col. 8, lines 36-37). Some or all of the images may be presented to the physicians (col. 9, lines 9-13). Figure 5 shows completion by acquiring further image data (col. 10, lines 48-58). Hsieh et al. acquire data or images until the examination is complete to avoid repeated appointments. The feature of an initial image triggers further acquisition. Hsieh et al. further examine a feature of an initial image in other images. There is no suggestion to recognize a distinguishing event constituting a subset of the examinations. The feature is not a distinguishing event constituting a subset.

The Examiner relies on start/stop of the process. However, the starting begins with the first image and ends with the last image. There is no suggestion to recognize a distinguishing event constituting a subset of the examination.

Independent claim 1 recites the processor operative to select a portion of the examination. Hsieh, et al. only mention images being used. The Examiner cites to "a subset of images as in Fig. 7" (Office Action, page 3). Figure 7 shows acquiring an initial image 138, and subsequent images 142 and 146 (col. 11, lines 21-34). The "initial" image means no images before. The subsequent images are acquired based on need (col. 11, lines 25-29), showing no acquisition of any other images. The whole examination is stored, not a portion.

The Examiner cites to "image subsets (82, 88, 92, 98)" (Office Action, page 3). Image 82 is an initial image (col. 9, lines 25-27), showing no images before not being selected. Additional processing may be performed for images 88, 92 and 98 to highlight further information (col. 9, lines 29-42). These four images are a series with different post processing performed sequentially (col. 9, lines 42-49). Every image created is analyzed. A portion is not selected for marking or storage.

The Examiner cites to "re-acquiring an ultrasound image set or subset (e.g. col. 2, line 44)" (Office Action, pages 3-4). Once a feature is identified, additional images may be reacquired at the suspected location (col. 2, lines 40-44). There is no discussion of other images not selected. Hsieh, et al. do not select a portion.

Claim 1 has been clarified to indicate that "portion" is less than all. The Examiner citations to Hsieh, et al. show different analysis or reacquisition, but not selection of less than all for marking or storage.

In the final Office Action, the Examiner relied on the non-temporal event recognition. As amended, claim 1 recites temporal events.

Similar to claim 1, claim 29 recites inputting data to an event recognition processor and processing whether a non-cyclical distinguished event has occurred, and if one has occurred, selecting a subset of the image data sets. Hsieh et al. do not suggest selecting a subset. Hsieh et al. create a sequence of images using them all, so do not review a sequence to determine a distinguishing event. Claim 29 is allowable.

Independent claim 21 recites automatically recognizing from image analysis and marking or storing non-repeating subsets of an examination where the one or more non-repeating subsets are bracketed by one or more pairs of distinguished events determined as a function of the image analysis. Hsieh do not deal with subsets for marking and storing. Instead, a same feature is

imaged until sufficient. Identifying lack of sufficiency and sufficient imaging of a feature does not mark or store a subset of an examination.

Dependent claims 4-10, 14-20, 22-28, 30-31, 36-37, and 39-48 depend from the independent claims 1, 21, and 29 discussed above, and are thus allowable for at least the same reasons as the corresponding independent claim. Further limitations distinguish over the reference or references used to reject the dependent claims.

Claims 4, 12, and 37 recite determining a distinguished event based on a rate of change of brightness. Hsieh et al. identify shape, size, curvature, or density of a potential lesion (col. 6, lines 56-63). Change in brightness may be used to find edges, but there is no suggestion to use rate of change. There is no suggestion to use rate of change between images as claimed in claim 37.

Claim 5 recites recognizing a jet in color Doppler as an event. The Examiner cites to heart valve prolapse detection, but Hsieh et al. do not even suggest this as a type of feature to be detected (see col. 5, lines 57-61).

Claim 6 recites selecting a portion of the examination between events. Hsieh et al. acquire more images until sufficient information is provided. There is no suggestion that initial or earlier acquired images are not to be used. If not used, there is no suggestion to select anything other than the last image. Hsieh et al. do not suggest selecting between events.

Claims 8, 9, 27, 28, 30, 42 and 43 recite selecting additional portions before and after the events of the first portion. Hsieh et al. do not suggest selecting the additional portions.

Claims 10 and 45 recite causing fewer than all image sets of a selected portion to be stored. Hsieh et al. mention a memory for a large amount of data (col. 4, lines 30-31), and that the acquired images are stored (col. 8, lines 36-37). Even in the atypical situation, there is no suggestion to store fewer than the selected portion.

Hsieh et al. do not suggest the audible feedback of claims 15-16, a recording icon of claim 18, or an incremented number of claim 19.

Claim 39 recites a rate of change of high velocities. Hsieh et al. do not deal with velocities or rate of change, let alone a rate of change of high velocities.

Claim 44 recites inputting from a stored exam. Hsieh et al. avoid further appointments by operating in real time, so do not input a stored examination.

New dependent claims 47-48 are also allowable over Hsieh, et al. As noted by the Examiner, the information, metastasis or other features of Hsieh, et al. are non-temporal, so are not analysis of a real-time sequence, or transitions.

CONCLUSION

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call Craig Summerfield at (312) 321-4726.

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Respectfully submitted,



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